

REMARKS

Entry of the foregoing and reconsideration of the subject application are respectfully requested in light of the comments which follow.

Claims 1-17 were pending in this application. In this response, claims 1, 5, and 15 are amended and no claim is canceled or added. Thus, claims 1-17 remain pending.

Support for the foregoing amendments can be found, for example, in at least the following locations in the original disclosure: the original claims and the specification, page 12, Table 1.

Entry of this Amendment is proper under 37 C.F.R. § 1.116, because the Amendment places the application in condition for allowance for the reasons discussed herein; does not present any additional claims; and places the application in better form for an appeal should an appeal be necessary. The Amendment is necessary and was not earlier presented, because it is made in response to arguments raised in the final rejection. Entry of the Amendment, reexamination and further and favorable reconsideration of the subject application in light of the following remarks, pursuant to and consistent with 37 C.F.R. § 1.116, are thus respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claim 5 is rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention on the grounds set forth on pages 5-6 of the Official Action.

Applicants have removed the alleged indefinite term from claim 5, and thus the rejection should be withdrawn.

CLAIM OBJECTIONS

Claim 12 is objected to under 37 C.F.R. 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim on the grounds set forth on page 2 of the Official Action. Applicants amended claim 1 to recite “about 2-4 % of Mo.” Thus, claim 12 falls within the scope of claim 1, and the objection should be withdrawn.

Claim 15 is objected to for being awkwardly recited. Applicants have amended the claim to correspond with the language suggested by the Examiner. Accordingly, the objection should be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-4, 6-9, 12-14 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,426,084 to Fukaya (hereafter “*Fukaya*”) on the grounds set forth at page 3 of the Official Action. Specifically, the Examiner alleges that the recited ferritic steel alloy is obvious over *Fukaya*, because *Fukaya* discloses a ferritic steel alloy having constituents whose wt% ranges overlap those recited in the claims.

Applicants respectfully traverse the rejection. Claims 1 and 5 each recite a ferric steel alloy comprising “about 0.03-0.2 % of N.” *Fukaya* explicitly discloses that the restoration of toughness by the addition of Ta or Nb is too difficult if the N content exceeds 0.02%. *See, e.g.*, col. 11, ll. 39-45. Therefore, *Fukaya* teaches away from adding anymore than 0.02 % of N, there

is no overlap of at least wt% ranges of that constituent, and thus the rejection should be withdrawn.

Additionally, claims 1 and 5 each recite “about 2-4 % of Mo” and “about 0.8-1.2 % of Nb.” *Fukaya* allegedly discloses in claims 1-7 steel foil material with at least one member selected from a group that includes Nb, Ta, Mo, and W within specified concentration ranges. In particular, Mo, if selected, is to be in a concentration of 1-4 %, and Nb, if selected, is to be in a concentration of $(93.C/12+93.N/14)*1.1$ % to 3 %. *See, e.g.*, col. 28, ll. 33-38. Further, *Fukaya* discloses that when Mo and/or W are added in large amounts (i.e. about 2-4%), then Nb must be limited to a smaller amount to avoid cracking during cooling and deterioration of the hot workability and toughness. *See, e.g.*, col. 9, ll. 61-68. Specifically, *Fukaya* discloses that Nb should be no more than $(93.C/12 + 93.N/14)*4.5$ %. *See, e.g.*, col. 10, l. 1. Further, *Fukaya* discloses that the C and N contents should be kept as low as possible, at least because they cause a marked lowering in the toughness of the hot-rolled sheet. *See, e.g.*, col. 11, ll. 39-45.

Additionally, *Fukaya* discloses only two examples of steel having Mo and/or W and an Nb content greater than 0.32 %, and only one example where Nb is about 0.8 %. *See, e.g.*, Examples 16 and 17 in Table 9 in columns 23 and 24. Neither Example 16 nor 17 disclose Mo and/or W concentrations of about 2-4 %. Further, in accordance with the concern about adding higher amounts of Mo and/or W and higher amounts of Nb, Example 17 compared to Example 16 has a higher concentration of Nb and a lower concentration of Mo and/or W. Therefore, *Fukaya* would lead one of ordinary skill in the art away from an embodiment wherein the Mo and/or W content and the Nb content were large. Thus, it would not have been obvious from the disclosure of *Fukaya* to form a ferritic steel alloy comprising about 2-4 % of Mo and about 0.8-

1.2 % of Nb as recited in claims 1 and 5.

Dependent claims 2-4 and 6-17, which depend from claim 1 or 5, respectively, are also not obvious for at least the reasons for claims 1 and 5. Accordingly, Applicants respectfully request withdrawal of the rejection.

Claims 1-4, 6-9, 12-14 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,286,442 to Uematsu (hereafter "*Uematsu*") in view of *Fukaya* on the grounds set forth at page 3 of the Official Action. Specifically, the Examiner alleges that the recited ferritic steel alloy is obvious over *Uematsu* in view of *Fukaya*, because *Uematsu* and *Fukaya* disclose a ferritic steel alloy having constituents whose wt% ranges overlap those recited in the claims.

Applicants respectfully traverse the rejection. Claims 1 and 5 each recite a ferric steel alloy comprising "about 0.03-0.2 % of N." *Uematsu* explicitly discloses that the toughness of the steel deteriorates with increased amount of nitrogen, and thus nitrogen content is kept under 0.03%. *See, e.g.*, col. 3, ll. 30-34. Therefore, *Uematsu* teaches away from adding about 0.03-0.2 % of N and there is no overlap of at least wt% ranges of that constituent, and thus the rejection should be withdrawn.

Further, *Uematsu* at least fails to explicitly disclose "about 0.8-1.2 % of Nb" as recited in claims 1 and 5. Specifically, *Uematsu* discloses that one or two of niobium, vanadium and titanium in a combined content between 0.05% and 1% is added to the steel alloy. *See, e.g.*, col. 4, ll. 26-32. *Uematsu* fails to disclose and the Examiner fails to provide any rationale for why niobium by itself would be selected at a concentration of about 0.8-1.2%. *Uematsu* provides no

guidance with regard to whether Nb would have been selected in an amount near the upper limit of the combined range. In contrast, the only guidance with regard to Nb concentration separate from the combination percentage is provided by the Examples presented in Table 4 in Columns 7 and 8, which specifies an Nb content of 0.25 or 0.29. Therefore, for at least these reasons one of ordinary skill in the art would not have expected success from the guidance provided in *Uematsu* of adding Nb in an amount between about 0.8 and 1.2 % as recited in claims 1 and 5.

Further, the rejection is based on the combination of *Uematsu* and *Fukaya*. Prior art must be considered in its entirety, including disclosures that teach away from the claims. *See*, MPEP § 2141.02 (VI). Although the Examiner appears to rely on *Fukaya* solely for the disclosure in *Fukaya* that Mo and W perform similar functions in a steel alloy, all of the disclosure of *Fukaya* must be considered in combination with *Uematsu*. The disclosures of *Fukaya* and *Uematsu* are consistent with each other with regard to N content and Nb content, both of which are inconsistent with the claimed invention.

For example, both *Fukaya* and *Uematsu* require the N content be very low (i.e. < 0.02% or < 0.03%, respectively), whereas claims 1 and 5 each recite about 0.03-0.2% of N. Similarly, for example, *Fukaya* discloses that the Mo and/or W concentration and the Nb concentration should not both be high, and if Mo and/or W is increased, then the Nb concentration should be lower. *Uematsu* fails to disclose high concentrations of Nb, and in the example containing Nb and Mo, the Nb content is about 0.29, which is similar to concentrations disclosed in *Fukaya*. *See, e.g.*, Example 7 in Table 4 in columns 7 and 8 of *Uematsu*. Therefore, the prior art when properly considered in its entirety teaches away from a steel alloy having the combination of about 2-4 % of Mo, about 0.8-1.2 % of Nb, and about 0.03-0.2 % of N as recited in claims 1 and

5. Thus, no *prima facie* case of obviousness has been established.

Dependent claims 2-4 and 6-17, which depend from claim 1 or 5, respectively, are also not obvious for at least the reasons for claims 1 and 5. Accordingly, Applicants respectfully submit that the rejection is improper, and should be withdrawn.

Claims 1-17 are rejected under 35 U.S.C. §103(a) as being unpatentable over European Patent Application No. EP 0688882 (hereafter “EP ‘882”) in view of *Fukaya* on the grounds set forth at pages 4-5 of the Official Action. Specifically, the Examiner alleges that the recited ferritic steel alloy is obvious over EP ‘882 in view of *Fukaya*, because EP ‘882 and *Fukaya* disclose a ferritic steel alloy having constituents whose wt% ranges overlap those recited in the claims.

Applicants respectfully traverse the rejection. Claims 1 and 5 each recite “about 0.8-1.2 % of Nb.” EP ‘882 discloses that a combination of Ti, Nb, V, and Zr in the steel alloy is limited to amounts up to 0.8 wt%. *See, e.g.*, p. 5, ll. 32-37. EP ‘882 fails to disclose an Nb content of up to 0.8 wt%, only that it may be a portion of the combination of Ti, Nb, V, and Zr, which combined has a content of up to 0.8 wt%. Further, EP ‘882 provides no examples of Nb added to the alloy without at least one other element selected from Ti, V, and Zr, or a concentration of Nb greater than 0.07%, much less about 0.8% as recited in claims 1 and 5. *See, e.g.*, p. 8, Table 2. Therefore, EP ‘882 provides no guidance to select Nb alone with a concentration at the upper limit of the combined range, and thus no *prima facie* case of obviousness has been established.

Additionally, the rejection is based on the combination of EP ‘882 and *Fukaya*. Prior art must be considered in its entirety, including disclosures that teach away from the claims. *See*,

MPEP § 2141.02 (VI). Although the Examiner appears to rely on *Fukaya* solely for the disclosure in *Fukaya* that Mo and W perform similar functions in a steel alloy, all of the disclosure of *Fukaya* must be considered in combination with EP '882. The disclosures of *Fukaya* and EP '882 are consistent with each other with regard to Nb content, both of which are inconsistent with the claimed invention.

For example, EP '882 limits the combined concentration of Nb, V, Ti, and Zr to no more than 0.8%, and in the examples the Nb concentration is less than 0.1%. Similarly, examples in *Fukaya* also disclose very low concentrations of Nb. *See, e.g.*, Example 7 in Table 4 in columns 7 and 8 of *Uematsu*. Therefore, the prior art when properly considered in its entirety teaches away from a steel alloy having the combination of about 2-4 % of Mo, about 0.8-1.2 % of Nb, and about 0.03-0.2 % of N as recited in claims 1 and 5. Thus, no *prima facie* case of obviousness has been established.

Dependent claims 2-4 and 6-17, which depend from claim 1 or 5, respectively, are also not obvious for at least the reasons for claims 1 and 5. Accordingly, Applicants respectfully submit that the rejection is improper, and should be withdrawn.

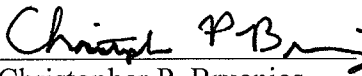
CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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